In [ ]:
```
# 1.Basic Variable Swapping
```

In [5]:
```
#1. Switch values of two integers
#Input: n1 = 20, n2 = 30
#Output: n1 = 30, n2 = 20
n1 = 20
n2 = 30
n1, n2 = n2, n1
print("n1 =", n1)
print("n2 =", n2)
```

```
n1 = 30
n2 = 20
```

In [9]:
```
#2. Switch values of two strings (characters)
#Input: char1 = "hello", char2 = "java"
#Output: char1 = "java", char2 = "hello"
char1 = "hello"
char2 = "java"
print("char1 =", char1)
print("char2 =", char2)
```

```
char1 = hello
char2 = java
```

In [8]:
```
#3. Switch one string value with one integer value
#Input: n1 = 200, char2 = "java"
#Output: n1 = "java", char2 = 200
n1 = 200
char2 = "java"
print("n1 =", n1)
print("char2 =", char2)
```

```
n1 = 200
char2 = java
```

In [14]:
```
# Banking and Transactions
#5. Update balance after deposit
#Initial balance: current_balance = 10000
#Deposit amount: deposit_balance = 5000
#Output:
# Before deposit: current_balance = 10000
# After deposit: current_balance = 15000
# 5. Update balance after deposit
# Initial balance: current_balance = 10000
# Deposit amount: deposit_balance = 5000

current_balance = 10000
deposit_balance = 5000

print(" Before deposit: current_balance =", current_balance)
current_balance += deposit_balance
print(" After deposit: current_balance =", current_balance)
```

```
Before deposit: current_balance = 10000
After deposit: current_balance = 15000
```

In [16]:
```
#6. Update balance after withdrawal
#Before: balance = 12000
#Withdrawal: 3000
# 6. Update balance after withdrawal
# Before: balance = 12000
# Withdrawal: 3000

balance = 12000
withdrawal = 3000
print(" Before withdrawal: balance =", balance)
balance -= withdrawal
print(" After withdrawal: balance =", balance)
```

```
Before withdrawal: balance = 12000
After withdrawal: balance = 9000
```

In [18]:
```
#7. Increase shopping cart items by 3
#Before: cart_items = 5
#After: ?
cart_items = 5
print(" Before update: cart_items =", cart_items)
cart_items += 3
print(" After update: cart_items =", cart_items)
```

```
Before update: cart_items = 5
After update: cart_items = 8
```

In [19]:
```
#8. Apply a 20% discount to a price
#Before: price = 1000
#After: ?

price = 1000
discount_rate = 0.20
print(" Before discount: price =", price)
discounted_price = price - (price * discount_rate)
print(" After discount: price =", discounted_price)
```

```
Before discount: price = 1000
After discount: price = 800.0
```

In [20]:
```
#Academic Calculations
#9. Calculate student percentage
#Input: obtain_marks = 430, out_of = 500
#Output: Percentage = ?


obtain_marks = 430
out_of = 500
percentage = (obtain_marks / out_of) * 100
print("Percentage =", percentage)
```

```
Percentage = 86.0
```

In [21]:
```
#10.Calculate total and average of 4 subjects
#Input Example:
```

```
# Subject 1: 80
# Subject 2: 75
# Subject 3: 90
# Subject 4: 85


subject1 = 80
subject2 = 75
subject3 = 90
subject4 = 85
total = subject1 + subject2 + subject3 + subject4
average = total / 4
print("Total Marks =", total)
print("Average Marks =", average)
```

```
Total Marks = 330
Average Marks = 82.5
```

In [32]:
```
#11. Calculate average of 3 numbers
#Input: num1 = 25, num2 = 35, num3 = 45
#Output: Average = ?


num1 = 25
num2 = 35
num3 = 45
average = num1 + num2 + num3/3
print("Average=",average)
```

```
Average= 75.0
```

In [ ]:
```
#Finance & Business Calculations
#12.Calculate profit or loss percentage
Input: cost_price = 500, selling_price = 600
Output: Profit or Loss = ?

#13. Calculate simple interest
Input: principal = 10000, rate = 5, time = 2
Output: Simple Interest = ?

#14.Calculate compound interest
Input: principal = 10000, rate = 5, time = 2
Output: Compound Interest = ?

#15.Calculate tax on income
Input: income = 500000, tax_rate = 10
Output: Tax = ?

#16.Calculate percentage increase or decrease
Input: initial_value = 200, final_value = 250
Output: Percentage Change = ?
```

In [29]:
```
#12.Calculate profit or loss percentage
#Input: cost_price = 500, selling_price = 600
#Output: Profit or Loss = ?
```

```
cost_price = 500
selling_price = 600
if selling_price > cost_price:
    print("profit")
else:
    print("loss")
```

```
profit
```

In [50]:
```
#13. Calculate simple interest
#Input: principal = 10000, rate = 5, time = 2
#Output: Simple Interest = ?



principal = 10000
rate = 5
time = 2
simple_interest = (principal * rate * time) / 100

print("Simple Interest =", simple_interest, "INR")
```

```
Simple Interest = 1000.0 INR
```

In [44]:
```
#14.Calculate compound interest
#Input: principal = 10000, rate = 5, time = 2
#Output: Compound Interest =?


principal = 10000
rate = 5
time = 2
amount = principal * ((1 + rate / 100) ** time)
compound_interest = amount - principal

print(compound_interest, "INR")
```

```
1025.0 INR
```

In [42]:
```
#15.Calculate tax on income
#Input: income = 500000, tax_rate = 10
#Output: Tax = ?


income = 500000
tax_rate = 10
tax = income * tax_rate / 100
print( tax, "INR")
```

```
50000.0 INR
```

In [43]:
```
#16.Calculate percentage increase or decrease
#Input: initial_value = 200, final_value = 250
#Output: Percentage Change = ?
```

```
initial_value = 200
final_value = 250
percentage_change = ((final_value - initial_value) / initial_value) * 100
print( percentage_change, "%")
```

```
25.0 %
```

In [ ]:
```
#Conversions
17. Convert boolean to integer
Input: True
Output: ?

#18.Convert float to string
Input: 45.67
Output: ?

#19.Convert 20°C to Fahrenheit
Input: 20°C
Output: ?

#20. Convert 50°F to Celsius
Input: 50°F
Output: ?

#21.Convert integer to binary
Input: 25
Output: ?
```

In [52]:
```
# 17. Convert boolean to integer
# Input: True



value = True
converted = int(value)
print("Output:", converted)
```

```
Output: 1
```

In [53]:
```
#18.Convert float to string
#Input: 45.67
#Output: ?


value = 45.67
converted = str(value)
print("Output:", converted)
```

```
Output: 45.67
```

In [1]:
```
#19.Convert 20°C to Fahrenheit
#Input: 20°C
#Output: ?

celsius = 20
fahrenheit = (celsius * 9/5) + 32
print("Output:", fahrenheit)
```

```
Output: 68.0
```

In [2]:
```
#20. Convert 50°F to Celsius
#Input: 50°F
#Output: ?

Input=50
c=(Input-32)*5/9
print(c,"c")
```

```
10.0 c
```

In [3]:
```
#21.Convert integer to binary
#Input: 25
#Output: ?

value = 25
converted = bin(value)
print("Output:", converted)
```

```
Output: 0b11001
```

In [ ]:
```
#Geometry

#21. Calculate area of a triangle
Input: base = 10, height = 6
Output: Area = ?

#22.Calculate perimeter of a square
Input: side = 9
Output: Perimeter = ?

#23.Calculate diameter of a circle
Input: radius = 14
Output: Diameter = ?

#24.Calculate volume of a cube
Input: side = 5
Output: Volume = ?

#25.Calculate surface area of a cuboid
Input: l = 4, b = 3, h = 2
Output: Surface Area = ?
```

In [9]:
```
#21. Calculate area of a triangle
#Input: base = 10, height = 6
#Output: Area = ?


base=10
height=6
area=1/2*base*height
print("Area ",area)
```

```
Area  30.0
```

In [14]:
```
#22.Calculate perimeter of a square           # formula is p=4a.
#Input: side = 9
#Output: Perimeter = ?

side = 9
perimeter = 4 * side
print("Perimeter =", perimeter)
```

```
Perimeter = 36
```

In [16]:
```
#23.Calculate diameter of a circle     # formula is D=2r
#Input: radius = 14
#Output: Diameter = ?

radius = 14
diameter = 2 * radius
print("Diameter =", diameter)
```

```
Diameter = 28
```

In [17]:
```
#24.Calculate volume of a cube        formula =  v=a**3
#Input: side = 5
#Output: Volume = ?


side = 5
volume = side ** 3
print("Volume =", volume)
```

```
Volume = 125
```

In [18]:
```
#25.Calculate surface area of a cuboid      #formula 2(l*b + b*h + h*l)
#Input: l = 4, b = 3, h = 2
#Output: Surface Area = ?

l=4
b=3
h=2
area=2*(l*b+b*h+h*l)
print(area)
```

```
52
```

In [ ]:
```
# Mathematical Expressions
```

In [ ]:
```
#26.Square of sum: (x + y)2
Input: x = 5, y = 7
Output: ?

#27.Simplify expression: x2 - 4x + 4
Input: x = 3
Output: ?

#25.Evaluate: (a + b)(a - b)
Input: a = 6, b = 2
Output: ?
```

```
#29.Sum of cubes: a3 + b3
Input: a = 1, b = 2
Output: ?

#30.Simplify: (x - y)2
Input: x = 10, y = 6
Output: ?

#31.Difference of cubes: x3 - y3
Input: x = 4, y = 1
Output: ?
```

In [1]:
```
#26.Square of sum: (x + y)2
#Input: x = 5, y = 7
#Output: ?


x = 5
y = 7
result = (x + y) ** 2
print("Output:", result)
```

```
Output: 144
```

In [3]:
```
#27.Simplify expression: x2 - 4x + 4
#Input: x = 3
#Output: ?

x =3
result = x**2 - 4*x + 4
print("Output:", result)
```

```
Output: 1
```

In [4]:
```
#25.Evaluate: (a + b)(a - b)
#Input: a = 6, b = 2
#Output: ?


a = 6
b = 2
result = (a + b) * (a - b)
print("Output:", result)
```

```
Output: 32
```

In [8]:
```
#29.Sum of cubes: a3 + b3
#Input: a = 1, b = 2
#Output: ?



a = 1
b = 2
result = a**3 + b**3
print("Output:", result)
```

Output: 9

In [9]:
```
#30.Simplify: (x - y)2
#Input: x = 10, y = 6
#Output: ?


x = 10
y = 6
result = (x - y) ** 2
print("Output:", result)
```

Output: 16

In [10]:
```
#31.Difference of cubes: x3 - y3
#Input: x = 4, y = 1
#Output: ?



x = 4
y = 1
result = x**3 - y**3
print("Output:", result)
```

Output: 63

In [ ]:
```
#String Operations

#32.If user input is:
Name: Dev
Age: 25
City: Jaipur
Hobby: Cooking
Then Output is :
Meet Dev, a 25-year-old enthusiast from Jaipur.

When not busy with daily tasks, Dev loves spending time cooking.
Life in Jaipur keeps Dev energetic and curious every single day.
With coding as a passion, the future looks creative and inspiring for
Dev in the Jaipur City.

#33.Create a Python program that asks the user for the following:
● Full Name
● Profession
● Favorite Quote
● Years of Experience
Output format:
-----------------------------------------------
Name : <Full Name>
Profession : <Profession>
Experience : <Years of Experience> years
Quote : "<Favorite Quote>"
-----------------------------------------------

#34.Ask the user:
● Movie Name
```

```
● Viewer Name
● Seat Number
● Show Time
Output format:
🎬 Movie Ticket
------------------------
Movie : <Movie Name>

Name : <Viewer Name>
Seat No : <Seat Number>
Time : <Show Time>
Enjoy the show!
```

In [2]:
```
#32.If user input is:
#Name: Dev
#Age: 25
#City: Jaipur
#Hobby: Cooking
#Then Output is :
#Meet Dev, a 25-year-old enthusiast from Jaipur.

#When not busy with daily tasks, Dev loves spending time cooking.
#Life in Jaipur keeps Dev energetic and curious every single day.
#With coding as a passion, the future looks creative and inspiring for
#Dev in the Jaipur City.




name = "Dev"
age = 25
city = "Jaipur"
hobby = "Cooking"
print(f"Meet {name}, a {age}-year-old enthusiast from {city}.\n")
```

```
Meet Dev, a 25-year-old enthusiast from Jaipur.
```

In [10]:
```
#33.Create a Python program that asks the user for the following:
#● Full Name
#● Favorite Quote
#● Years of Experience
#Output format:
#-----------------------------------------------
#Name : <Full Name>
#Profession : <Profession>
#Experience : <Years of Experience> years
#Quote : "<Favorite Quote>"
#-----------------------------------------------


Name=input("Enter your full name")
Profession=input("Enter your profession")
Experience=int(input("Enter your Experience in years"))
Fav_Quote=input("Enter your favorite quote")
print(f'''
```

```
------------------------------------------------
Name :{Name}
Profession : {Profession}
Experience : {Experience} years
Quote : {Fav_Quote} ''')
```

```
------------------------------------------------
Name :Anand shrivastav
Profession : student
Experience : 3 years
Quote : coding
```

In [8]:
```
#34.Ask the user:
#● Movie Name
#● Viewer Name
#● Seat Number
#● Show Time
#🎬 Movie Ticket
#------------------------
#Movie : <Movie Name>

#Name : <Viewer Name>
#Seat No : <Seat Number>
#Time : <Show Time>
#Enjoy the show!



movie_name = input("Enter the movie name: ")
viewer_name = input("Enter your name: ")
seat_number = input("Enter your seat number: ")
show_time = input("Enter the show time: ")


print("\n🎬 Movie Ticket 🎟️")
print("-" * 24)
print(f"Movie   : {movie_name}\n")
print(f"Name    : {viewer_name}")
print(f"Seat No : {seat_number}")
print(f"Time    : {show_time}")
print("Enjoy the show!")
```

```
🎬 Movie Ticket 🎟️
------------------------
Movie   : mahaveer nrsimha

Name    : Anand shrivastav
Seat No : 207
Time    : 7:pm
Enjoy the show!
```

In [ ]:
```

```